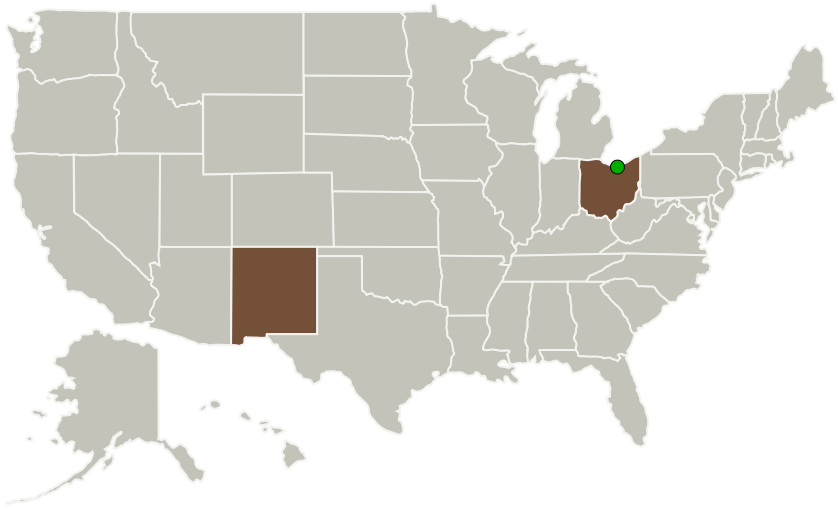
A New Li Anode Technology for Improved Performance, Phase I

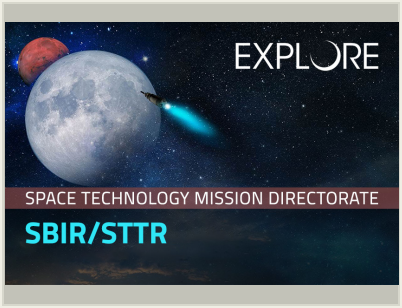
Completed Technology Project (2010 - 2010)

Project Introduction

Lithium (Li) metal-based rechargeable batteries have many advantages over Li-ion systems including significantly higher energy density, lower cost, and the option of using positive electrode materials that do not have to be pre-lithiated. Unfortunately, Li metal electrodes form metal dendrites upon cycling, compromising battery safety and limiting cell life. TH Chem, Inc. (THC) proposes to team with Sandia National Laboratories (SNL) and New Mexico Institute of Mining and Technologies (NMT) to develop a novel, low-cost approach to stabilization of Li metal anodes for high performance rechargeable Li batteries. Novel electrolyte additives will be selected and utilized in Li cell electrolyte systems, promoting formation of protective coating on Li metal anodes for improved cycle and safety performance. In Phase I, electrolyte additives will be selected and studied trough assembly and electrochemical evaluation of Li cells. The PI and his team have extensive experience in lithium battery chemistries and technologies.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
TH Chem, Inc.	Lead Organization	Industry Minority-Owned Business, Women-Owned Small Business (WOSB)	Albuquerque, New Mexico
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
New Mexico	Ohio

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138743)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

TH Chem, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

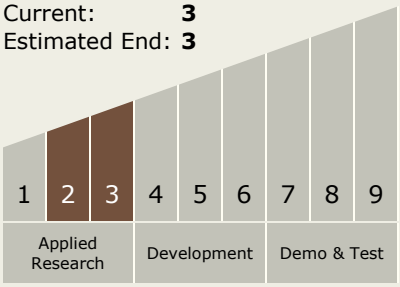
Carlos Torrez

Principal Investigator:

Tuqiang C Chen

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System